further conclusion, that this can only be done by such an accurate imitation of a disabled bird as shall deceive the enemy into a belief in the possibility of capture. And lastly, there are all the powers of memory and the qualities of imagination which enable good acting to be performed. All this reasoning and all this knowledge is certainly involved in the action of the bird-mother, just as certainly as reasoning and knowledge of a much profounder kind is involved in the structure or adjustment of the organic machinery by which and through which the action is itself performed.

There is unquestionably a sense, and a very important sense, in which all these wonderful operations of instinct are "automatic." The intimate knowledge of physical and of physiological laws—the knowledge even of the mental qualities and dispositions of other animals—and the processes of reasoning by which advantage is taken of these,—this knowledge and this reasoning cannot, without manifest absurdity, be attributed to the birds themselves. This is admitted at least as regards the birds of the present day. But surely the absurdity is quite as great if this knowledge and reasoning, or any part of it, be attributed to birds of a former generation. In the past history of the species there may have been change—there may have been development. But there is not the smallest reason to believe that the progenitors of any bird or of any beast, however different in form, have ever founded on deliberate effort the instincts of their descendants.

[*To be Continued.*]

PROFESSOR JAMES C. WATSON.

Professor James C. Watson, Director of the Observatory of the University of Wisconsin, died at Madison, Wis., on the morning of November 23, after an illness of but three or four days.

Professor Watson was born on January 28, 1838, and was therefore nearly 43 years of age. He graduated at the University of Michigan in 1857, remaining there as instructor and Professor of Mathematics and Astronomy till 1863, at which time he was made Director of the Ann Arbor Observatory. He held this position till 1878, when he accepted the Directorship of the Washburn Observatory at Madison. He made observations upon the total solar eclipse of 1869 in Iowa, and that of 1870 in Sicily; and in 1874 had charge of the very successful American Expedition, which observed the transit of Venus at Peking, China. In 1870 he received the Lalande gold medal from the French Academy of Sciences, for his various astronomical works and discoveries. His most elaborate writings are: *A Popular Treatise on Comets* (1860) and *Theoretical Astronomy, relating to the Motions of the Heavenly Bodies revolving around the Sun in accordance with the Law of Universal Gravitation, with Numerical Examples and Auxiliary Tables* (1868). In addition to these, he has published from time to time, in *Gould's Astron. Journ.*, *Astron. Nach.*, *Am. Journ. of Sci.*, etc., short papers relating, for the most part, to the discovery and observations of asteroids, and the computations of comet orbits. For several years he gave especial attention to the search for asteroids, and in this work was eminently successful, discovering, in all, twenty-one of these bodies, between the years 1863 and 1877. At the time of his death, Professor Watson was engaged in building and equipping one of the finest observatories in America. The meridian circle, which is to contain several new features suggested by himself, is now in the hands of the Clarks, and will not be finished, probably, for nearly a year. Other instruments of the highest order are either already mounted and in operation, or are in course of completion. Careful preparations had been made also for a systematic search for the planet Vulcan, a problem in which Professor Watson was deeply interested. W. C. W.

THE AMERICAN SOCIETY OF MICROSCOPISTS.

(From advanced sheets of *American Naturalist*, for December; Microscopical Department under the direction of Dr. R. H. Ward.)

Probably no thoughtful person who attended both meetings this summer, the American Society of Microscopists at Detroit, and the Subsection of Microscopy, A. A. A. S., at Boston, failed to notice the nearly equal division of strength between the two conventions. The personal attendance at the meetings was about equal, though mainly of different individuals; the number of papers read was precisely the same, and it is only fair to say that in interest and importance they were very evenly divided. It is obvious that if the strength of the two meetings could have been combined in one, the result would have been far more adequate and satisfactory. This reflection has derived force from the well known fact that in the Microscopical Congress at Indianapolis, nearly half the voices were in favor of joining with the A. A. A. S., instead of forming a separate society, the latter course being adopted in the critical vote by a majority of one. From first to last, it has been of great and conceded importance to combine all our strength in one enterprise; but the obstacles which originally rendered this impossible, still remain, and it is evident that indiscreet controversy might increase and perpetuate the difficulties it was designed to remove. It would be absurd to ask persons, accustomed to attend the meetings of the great society, and highly valuing its opportunities for intercourse with leading minds in various departments of science, to abandon that for any narrow organization, however attractive might be its field. On the other hand the new society could not profitably be united with the old, as has been proposed, without a more cordial and general support of such a procedure than could at present be hoped for. The subordination to greater interests, which would be encountered in uniting with the great society would be more than counterbalanced, in many minds, by the social and scientific advatages gained; and the fact that many of the papers read would be excluded from the Proceedings by a necessity which admits only contributions new to science, would be of little consequence, since popular papers gain an earlier and a wider distribution through the popular journals; but a more serious difficulty arises from the localities in which the meetings of the A.A.A.S., are sometimes held. The large and powerful society can afford to appoint meetings, not unfrequently, for the sake of cultivating local interest in science, in localities which would be unavailable for the microscopical meetings. A joint meeting at Boston would have given a large increase of vitality; the same will not be equally true of all other localities.

If for these or any other reasons, it should be impracticable to combine the two societies at present, the greatest advantages would doubtless be secured by such a policy as would show, on both sides of the question, a reasonable and considerate regard for the interests of the other. The very large minority at Indianapolis acquiesced in the formation of a new society with the understanding that the times and places of meeting were to be so chosen as to best accommodate those who might wish to attend both. This policy, if fully carried out, would not prevent meeting at the same place when expedient, and would not require it when some other correlated place would be advisable. It would give many of the advantages of union, with entire freedom from its difficulties. It is the least that could in reason be asked, or that could in common courtesy be granted, as a means of securing a cordial and harmonious support for the new society.

THE first number of a periodical, devoted to the subject of instruments, will be issued January 1, 1881. It will be published in Berlin under the name of the "Zeitschrift für Instrumentenkunde," and will be prepared by a board of twenty-one editors, including the most noted instrument makers of Europe and representatives of different branches of science in which instruments of precision are employed. Such a periodical is greatly needed, and the names of the editors are a guarantee of its success. O. S.